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BUREAU OF STANDARDS COMPLETE SPECIFICATION

(1 SHEET)

June 5-1919

holes drilled into Ar hour
may be covered by canvas
thin steel sheet etc.

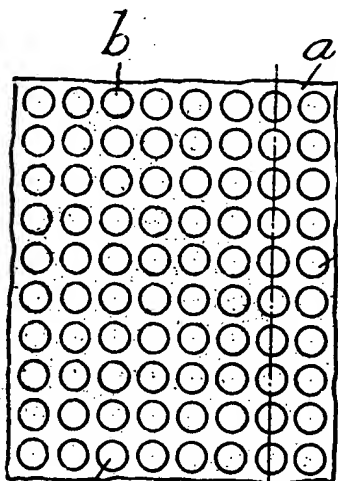


FIG. 1



FIG. 2

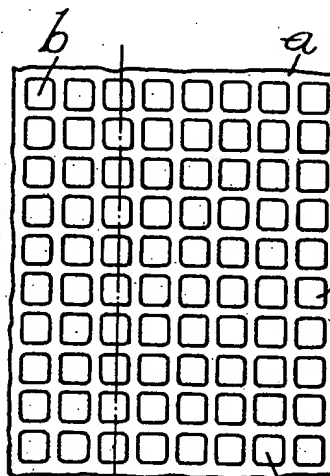


FIG. 3



FIG. 4

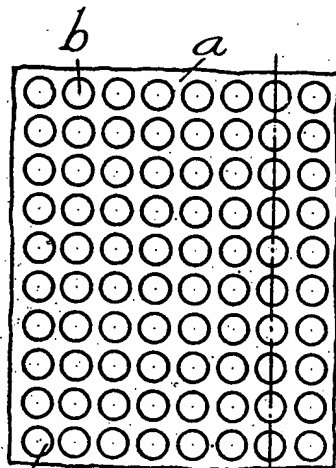


FIG. 5

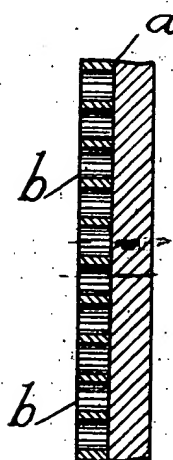


FIG. 6

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As the principle of our invention will be the same to whatever form of bullet proof shield or armour it is applied, a description of it in connection with a plate made of what is known as bullet proof steel will suffice. The accompanying drawings illustrate various forms in which such plates may be made:—

- 5 Figs. 1 and 2 illustrate in front elevation and section respectively a plate with circular holes or recesses.

Figs. 3 and 4 are similar views of a plate with square holes or recesses.

Figs. 5 and 6 are likewise similar views but with a built up plate.

The same letters refer to similar parts throughout the several views.

- 10 We form on the outer face of such a plate a, (i.e. the face upon which the projectiles strike) a series of closely spaced recesses or closed ended holes b. The holes may be of any desired shape, such as circular, (as in Figs. 1 and 2,) oval, rectangular (as in Figs. 3 and 4) or multiangular and are sunk into the plate for any desired depth according to the original thickness of the plate.
- 15 Material is thus removed without unduly impairing its rigidity. It should be observed that the thickness of the walls surrounding the holes or recesses is less than that of the solid portion of the plate. It should also be mentioned that as in the case of certain previously known bullet proof armour, the area of each hole in the face of the plate is less than the cross sectional area at its
- 20 major diameter of the bullet or projectile which the plate is designed to resist.

- We have found by experiment that in the case of a bullet proof plate of 12 millimetres thickness, the front face of which has been made in the improved form herein described, making the plate equal in weight per square foot to a 9.6 millimetre thick solid plate, it is possible to stop the standard German
- 25 steel cored armour piercing bullet at the close range of 20 yards, which under exactly the same conditions would be impossible with a 9.6 millimetre solid plate.

- Also it is found that a bullet or projectile striking the walls surrounding the closed ended holes is subjected to either (1) deflection or (2) a decapping
- 30 action which results in the breakdown of the steel core of the bullet or projectile proper, or (3) in the case of a bullet striking the centre of the closed ended holes, the energy of the bullet is expanded in breaking down the thin walls surrounding the hole, thereby avoiding penetration.

- In certain cases we may employ a built up plate, as shown in Figs. 5 and 6
- 35 the front layer of which is perforated with holes b, by any known means.

- From the foregoing it will be seen that by making bullet proof plates, shields or armour according to our invention, a considerable saving in weight is effected and at the same time the liability to penetration is decreased. This reduction in weight alone is a desideratum where aeroplanes, motor vehicles,
- 40 and motor boats are concerned.

It is obvious from the description herein given, that our improved method of increasing the resistance of a plate to the penetration of projectiles would also be applicable to the armouring of warships.

- So as to reduce any frictional surface resistance which might be set up by
- 45 the beforementioned recesses, the plates may be covered with any light material such as canvas, thin sheet steel, or the like, without in any way impairing its capabilities to resist penetration.

- Having now particularly described and ascertained the nature of this invention and in what manner the same is to be performed, we declare that
- 50 what we claim is:—

1. In bullet proof shields, armour, and like projectile resisting devices, of the type in which the outer face (i.e. the face upon which the bullets or projectiles strike) is formed with a series of closely spaced recesses or closed ended holes, the formation of the walls surrounding the holes or recesses of a less
- 55 thickness than the thickness of the solid portion of the plate, in the manner and for the purposes substantially as herein described.

2. In bullet proof shields, armour, and the like projectile resisting devices, as claimed in Claim 1, the alternative form of construction, wherein the plate is of a built up character, the front portion being perforated with holes, in the manner and for the purposes substantially as herein described.

3. Bullet proof shields, armour and like projectile resisting devices, constructed, arranged and operating in the manner substantially as herein described and illustrated on the accompanying sheet of drawings. 5

Dated this 17th day of October, 1917.

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